Amendments to the Claims:

This listing of claims will replace all prior versions , and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A device for measuring gaseous fluid flow of flowing gaseous fluid comprising:

A) a disturbance means for producing disturbances in the flow without obstructing said fluid flow,

B) an optical unit for producing a light beam directed through said flowing gaseous fluid,

C) a detector for monitoring at least a portion of said light beam after said light beam exits said flowing gaseous fluid,

D) a processor for calculating flow values based on signals from said detector.

Claim 2 (previously presented): The device as in claim 1 wherein said disturbance means comprises a heating unit.

Claim 3 (previously presented): The device as in claim 1 wherein said disturbance means comprises a droplet injector.

Claim 4 (previously presented): The device as in claim 1 wherein said flowing fluid is breathing air flowing through a respirator tube.

Claim 5 (previously presented): The device as in claim 3 wherein said droplet injector is a water droplet injector.

Claim 6 (previously presented): The device as in claim 5 wherein said optical unit comprises a pattern producing unit for producing an optical pattern in said flowing fluid.

Claim 7 (previously presented): The device as in claim 5 wherein said optical unit comprises a lens grating for producing a spatially periodic pattern in said flowing fluid.

Claim 8 (previously presented): The device The device as in claim 7 and further comprising a lens for focusing onto said detector light reflected or defracted from water droplets as said droplets pass through said spatially periodic pattern.

Claim 9 (previously presented): The device as in claim 8 wherein said processor is programmed with an algorithm for converting time varying signals from said detector into temporal frequency information.

Claim 10 (previously presented): The device as in claim 9 wherein said algorithm includes provisions for performing Fast Fourier Transform.

Claim 11 (previously presented): The device as in claim 9 wherein said processor is also programmed with an algorithm for determining fluid flow rates using said temporal frequency information and spatial frequency information corresponding to said spatially periodic pattern.

Claim 12 (previously presented): The device as in claim 5 wherein said detector is a detector array.

Claim 13 (currently amended) A device for measuring flow of a gaseous fluid comprising:

A) a laser and laser optics configured to direct laser beams produced by said laser through a flowing gaseous fluid to produce a flow perturbed laser beam,

B) an interference producing means for producing interference patterns in said flow perturbed laser beam,

C) two optical detectors defining a first detector configured to monitor at least one interference fringe defining a first interference fringe and a second detector configured to monitor at least one interference fringe other than said first interference fringe,

D) a correlation means comprising a computer processor for correlating data from said first and second detectors to determine flow rate of said fluid.

Claim 14 (previously presented): A device as in claim 13 wherein said laser optics define a beam crossing location where said beam passes through said flowing fluid and further comprising at least one heating element configured to heat said fluid upstream of said crossing location.

Claim 15 (previously presented): A device as in claim 14 wherein said fluid flow is alternately in opposite directions, defining a forward direction and a reverse direction, wherein said at least one heating element is two heating elements, one located upstream of said crossing location with flow in the forward direction and the other located upstream with flow in the reverse direction.

Claim 16 (previously presented): A device as in claim 13 wherein said correlation means comprises an oscilloscope for comparing fringe data.

Claim 17 (previously presented): A device as in claim 13 wherein said correlation means comprises analog to digital converter and a digital processor programmed to perform cross-correlation analysis to compare fringe data and to calculate flow velocity and direction from results of said cross correlations.

Claim 18 (previously presented): A device as in claim 13 wherein said correlation means comprises analog to digital converter and a digital processor programmed to perform cross-spectral analysis to compare fringe data and to calculate flow velocity and direction from results of said cross spectrum.

Claim 19 (previously presented): A device as in claim 13 wherein said correlation means comprises analog to digital converter and a digital processor programmed to perform cross-correlation analyses to compare low frequency fringe data to calculate flow velocity and direction from results of said cross-correlation for the onset of the flow and to perform running average and compute the number of zero crossing points per interval for high frequency fringe data to calculate the flow rate for the subsequent portion of the breathing cycle.

Claim 20 (previously presented): A device as in claim 13 wherein said device is configured to monitor flow of a respirator.

Claim 21 (currently amended) A method of monitoring flow of a gaseous fluid comprising the following steps: A) producing optical perturbations in said flow at a first location, B) transmitting a laser beam through said flow

downstream of said first location to produce a perturbed laser beam, C) measuring perturbations in at least two separate portions of said perturbed laser with at least two detectors, and D) comparing information from said at least two detectors to determine said flow.

22. A method as in claim 21 wherein an oscilloscope is utilized to compare said information from said two detectors.

23. A method as in claim 21 wherein said information from said two detectors are compared using an analog to digital converter and a digital processor configured with an algorithm to perform cross correlations.

24. A method as in claim 21 wherein said information from said two detectors are compared using an analog to digital converter and a digital processor configured with an algorithm to perform cross spectral analysis.

25. A method as in claim 21 wherein said information from said two detector are compared using an analog to digital converter and a digital processor is configured with an algorithm to perform cross correlation analysis to determine the flow velocity and flow direction at the onset of the flow during a portion of a breathing cycle and, during a subsequent portion of the breathing cycle to smooth the signal fluctuations in each array of said values by performing running averages of 4-8 values and to compute the number of zero crossing points during selected time intervals to calculate flow rate for the subsequent portion of the breathing cycle.

26. A device for measuring gas flow in a respirator tube comprising a flowing gas: A) a tube section having a transparent section to permit the

passage of light through said flowing gas, B) optical elements for producing a spatially periodic pattern in said flowing gas C) a water drop injector for injecting water droplets into said flowing gas, D) a detector, E) a focusing element for focusing light reflected or refracted from said water droplets onto said detector as said water droplets pass through said spatially periodic pattern, F) a processor for converting signals from said detector into fluid flow information.